



MICROCOMPUTER USER'S LIBRARY SUBMITTAL FORM

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Ref. No. BB11

☐ 4004 ☐ 8008 ☒ 8080

(use additional sheets if necessary)

Program Title BCD TO BINARY CONVERSION ROUTINE

Function Converts BCD value (1-8 digits) to Binary value (max. 24 bits)

Required Hardware NONE

Required Software NONE

Input Parameters DE register pointing to Most Significant BCD digit
A register has the number of BCD digits to be converted

Output Results A register has the Most Significant 8-bits
H and L register has the lower 16 bits

Registers Modified: A11	Maximum Subroutine Nesting Level: 1
RAM Required: NONE	Assembler/Compiler Used: MAC 80
ROM Required: 38 bytes	Programmer: Chon Hock Leow Tektronix
	Company: Box 500, Dept. 50-447 Beaverton, Oregon 97077

REF. NO. BB11.
PROGRAM NAME BCD TO BIN ROUTINE

BCD TO BIN ROUTINE

ON ENTERING THIS PROGRAM
DE REG. POINTS TO MS BCD DIGIT
A REG. HAS THE NUMBER OF BCD DIGITS TO BE CONVERTED

ON EXIT
THE BINARY VALUE IS IN A.H.L REG. WITH A REG. HAVING
THE MS 8 BITS AND HL REG. HAVING THE LOWER 16 BITS

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J300      ORG      300H
          CSEG
BCDBIN:   MVI      C, 4
0300 4F    MOV      C, A      ; MOVE NUMBER OF BCD DIGITS TO C REG.
0301 210000 LXI      H, 0      ; INITIALIZE H & L RTO 0
0304 AF    XRA      A          ; AND A TO 0

LOOP:     CALL     BCD        ; CALL *10 ROUTINE
          DCR      D          ; POINT TO NEXT LOWER BCD DIGIT
0308 13    JNZ      LOOP      ; IF CONVERSION IS NOT FINISHED, KEEP GOIN
0309 8D    DCR      C
030A C20503 JNZ      LOOP
030D C9    RET

; *10 ROUTINE
BCD:      PUSH     D          ; SAVE DE POINTER IN STACK
          PUSH     H          ; SAVE ACCUMULATED LOWER 16 BITS
          MOV      B, A      ; SAVE A IN B REG.
          DAD      H          ; AHL ← AHL + 2
          ADC      A          ; AHL ← AHL + 4
          DAD      H          ; AHL ← AHL + 4
          ADC      A          ; AHL ← AHL + 4
          POP      D          ; RESTORE OLD LOWER 16 BITS TO DE REG.
          DAD      D          ; AHL ← AHL + 5
          ADC      B          ; AHL ← AHL + 10
          DAD      H          ; AHL ← AHL + 10
          ADC      A
030E D5    PUSH     D
030F E5    PUSH     H
0310 47    MOV      B, A
0311 29    DAD      H
0312 8F    ADC      A
0313 29    DAD      H
0314 8F    ADC      A
0315 D1    POP      D
0316 19    DAD      D
          ADC      B
0317 88    DAD      H
          ADC      H
0318 29    DAD      H
          ADC      H
0319 8F    ADC      A

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021A 47	MOV	B, A	/SAVE A IN B REG.
021B 01	POP	D	/RESTORE BCD DIGIT POINTER
021C 1A	LDA	D	/GET NEW DIGIT
021D 85	ADD	L	/ADD IN NEW DIGIT
021E 6F	MOV	L, A	
021F 7C	MOV	A, H	
0220 0E00	ACI	0	/ADD IN CARRY
0222 67	MOV	H, A	
0223 78	MOV	A, B	
0224 0E00	ACI	0	/ADD IN CARRY
0226 09	RET		
0000	END		